



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CARIBBEAN ENVIRONMENTAL PROTECTION DIVISION
CITY VIEW PLAZA, SUITE 7000
#48 165 RD. KM 1.2
GUAYNABO, PR 00968-8069

CERTIFIED MAIL /RETURN RECEIPT REQUESTED
Article Number: 7015 0920 0000 8688 5283

MAY 31 2017

Mr. Alvin E. Crespo
Director
Environmental Health and Safety
Bristol-Myers Squibb Manufacturing Company
Humacao Operations
P.O. Box 609
Humacao, Puerto Rico, 00792-1255

Re: Technical Review of the January 17, 2017 Phase 2C Release Assessment Potential Preferential Pathway Evaluation Sampling and Analysis Plan for the Bristol-Myers Squibb Manufacturing Company, Humacao, Puerto Rico
EPA ID Number: PRD 090021056

Dear Mr. Crespo:

The United States Environmental Protection Agency-Region 2 (EPA) has reviewed the January 17, 2017 Phase 2C Release Assessment Potential Preferential Pathway Evaluation Sampling and Analysis Plan (SAP), submitted by Bristol-Myers Squibb Manufacturing Company (BMSMC) for its facility in Humacao, Puerto Rico. The SAP indicates that BMSMC proposes to focus the investigation only on the compound 1,4-dioxane during the Phase 2C Release Assessment. Adequate rationale for excluding the previously detected compounds of potential concern (COPCs) is not provided in the SAP. As discussed in previously submitted comments on the Phase 1 and Phase 2A Release Assessments SAPs and the *Technical Memorandum: Proposed Sampling Program Offsite Groundwater – South of Facility*, BMSMC is prematurely reducing the target analyte list. Enclosed are the EPA's comments on the Report. Please provide your response to the enclosed comments within 30 days of receipt of this letter. If you have any questions regarding this correspondence, please contact Socorro Martinez of my staff at (787) 977-5886 or via email at martinez.socorro@epa.gov.

Sincerely,

Carmen R. Guerrero-Pérez
Director

Caribbean Environmental Protection Division

cc: Manuel O. Claudio Rodriguez, Manager,
Land Pollution Control Program, PREQ

Enclosure

**TECHNICAL REVIEW JANUARY 17, 2017 PHASE 2C RELEASE ASSESSMENT
POTENTIAL PREFERENTIAL PATHWAY EVALUATION
SAMPLING AND ANALYSIS PLAN
BRISTOL-MYERS SQUIBB MANUFACTURING COMPANY
HUMACAO, PUERTO RICO**

I. INTRODUCTION

The January 17, 2017 Phase 2C Release Assessment Potential Preferential Pathway Evaluation Sampling and Analysis Plan (SAP) was prepared in response to the results reported in the 2016 Release Assessment Phase 1 and 2A Field Program. Specifically, the 2016 results identified compounds of potential concern (COPCs) above the May 2016 U.S. EPA Regional Screening Levels (RSLs) for tapwater and/or residential groundwater concentrations for vapor intrusion along the perimeter and downgradient of the southern boundary of the BMSMC facility. Additional field investigation activities along State Road No. 3 are proposed in the Phase 2C Release Assessment to evaluate the interaction between groundwater flow and subsurface utilities and whether there is a potential preferential pathway for localized groundwater flow to the east. Specific concerns regarding the SAP are provided below.

II. GENERAL COMMENTS

1. In the Phase 2C Release Assessment Potential Preferential Pathway Evaluation SAP BMSMC proposes only sampling and analyzing for 1,4-dioxane (SW-846 Method 8270D-SIM) during the groundwater investigation. The concern is that in the *November 2016 Technical Memorandum: Proposed Sampling Program Offsite Groundwater – South of Facility*, BMSMC identified the following contaminants of potential concern in groundwater: benzene, tert-amyl alcohol, chloroform, vinyl chloride, naphthalene, benzaldehyde, C11-22 aromatics, methyl-tert butyl ether (MTBE), 1,2-dichloroethane, dichlorodifluoromethane, 1,4-dioxane, benzo(a)anthracene, C9-C10 Aromatics, and dieldrin. As such it is unclear why the 1,4-dioxane is the only target analyte. BMSMC has not provided a rationale for excluding the other groundwater COPCs from the target analyte list in the Phase 2C Release Assessment SAP. The concern is that any or all of the COPCs may be migrating along the potential preferential pathway being evaluated in this phase 2 investigation. As discussed in previous reviews, it appears that BMSMC is prematurely reducing the target analyte list and that the limited sampling is not sufficient to completely evaluate the potential preferential pathway. BMSMC should revise the Phase II SAP to include a complete analyte list for groundwater. Specifically include the full target analyte list for SW-846 Method 8260C, 1-4 dioxane and polycyclic aromatic hydrocarbons (PAHs) for SW-846 Method 8270D-SIM, volatile petroleum hydrocarbons (VPH) fractions for Massachusetts Department of Environmental Protection (MADEP) Method VPH-04-1.1, and extractable petroleum hydrocarbons (EPH) fractions for the MADEP Method EPH-04.

III. SPECIFIC COMMENTS

Section 2.2.2 Soil Management, Page 7

1. If the utility bedding material or underlying soil is discovered to be contaminated (i.e., a source or secondary source), BMSMC should consider using not re-using this soil as backfill material and using clean fill material instead.

Section 2.3.2 Piezometer Installation, Page 10

2. BMSMC indicates that the proposed shallow piezometer (OSPZ-1) will be incorporated into the monthly depth to groundwater measurement program. Please clarify how the monthly depth to groundwater measurement program fits into the release assessment and where the results will be reported.

Section 2.3.2 Piezometer Installation, Page 10

3. In addition to 1,4-dioxane, the groundwater samples should also be analyzed for volatile organic compounds (VOCs), PAHs, VPH/EPH petroleum fractions to fully evaluate the potential preferential pathway. Refer to General Comment #1 above.

Section 2.8 Groundwater Data Analysis, Page 13

4. BMSMC states: "If the 1,4-Dioxane concentrations in the sewer bedding material is similar to the 1,4-Dioxane concentrations in groundwater at the downgradient southern perimeter of the Facility and significantly greater than the 1,4-Dioxane concentrations in offsite groundwater monitoring wells, then it is likely the sewer bedding material is acting as a potential preferential pathway for contaminant transport in groundwater."

Although concentration gradient is one indicator of a potential preferential pathway, it is not the only indicator that should be used to decide whether a preferential pathway is complete. The sewer/storm water test pit results, groundwater flow results, and the groundwater concentration data should all be inputs into the decision as to whether the potential preferential pathway is complete. Please revise this section accordingly.

Figure 2 Sanitary and Storm Sewer Layout

5. Please label the end points of "Section A" on the aerial and cross-section views in Figure 2.

Figure 3 Proposed Potential Preferential Pathway Evaluation Sample Locations

6. Please indicate what the black hatch represents in the "Legend" in Figure 3.